Cancel claims 1-36.

Please add the following claims.

37. (New) An isolated enzyme product of plant origin designated NPPase, characterized in that it catalyses the hydrolysis of nucleotide sugars in equimolar conditions to sugar-phosphate and corresponding nucleoside monophosphate, is able to hydrolyse bis-PNPP, is stable at pH between 4 and 7.5, and has an apparent molecular weight determined by gel filtration around 70 kDa for the monomeric form and around 270 kDa for the homopolymeric form.

38.(New) The enzyme product according to claim 37, characterized in that:
it does not hydrolyse, GlP, G6P, AMP, 3-phosphoglycerate, AMPc and nucleic acids; it is inhibited by orthophosphate, inorganic pyrophosphate, and phosphate esters; it is resistant to Proteinase K or Pronase; and it recognizes as substrates, ADPG, UDPG, GDP-glucose, ADP-mannose, APS, PAPS and bis-PNPP.

39. (New) The enzyme product according to claim 37, that is resistant at a temperature of 65°C for 30 minutes, displays a K_{eq} of reaction of 110 and its $\Delta G'$ is -2.9 kcal/mol.

40. (New) The enzyme product according to claim 37 that is isolated from barley.

41. (New) The enzyme product according to claim 37 wherein the amino acid sequence of its N-terminal end is as represented by SEQ ID NO:1, and its amino acid sequence contains internal sequences represented by SEQ ID NO:2, SEQ ID NO:3, SEQ ID NO:4, SEQ ID NO:5 and SEQ ID NO:6.

42. (New) The enzyme product according to claim 40 wherein the amino acid sequence of its N-terminal end is as represented by SEQ ID NO:1, and its amino acid sequence contains internal sequences represented by SEQ ID NO:2, SEQ ID NO:3, SEQ ID NO:4, SEQ ID NO:5 and SEQ ID NO:6.

43. (New) The enzyme product according to claim 41, that contains a sequence represented by SEQ ID NO:23.

44. (New) The enzyme product according to claim 38, wherein its Km for ADPG 15 is 0.5 mM.

45. (New) The enzyme product according to claim 37 that is isolated from rice.

46. (New) The enzyme product according to claim 37 wherein the amino acid sequence of its N-terminal end is as represented by SEQ ID NO:7, and its amino acid sequence contains internal sequences represented by SEQ ID NO:8, SEQ ID NO:9, 20 SEQ ID NO: 10, SEQ ID NO: 11, SEQ ID NO: 12, SEQ ID NO: 13, SEQ ID NO: 14, SEQ ID NO: 15, SEQ ID NO:16 and SEQ ID NO:17.

47. (New) The enzyme product according to claim 45 wherein the amino acid sequence of its N-terminal end is as represented by SEQ ID NO:7, and its amino acid sequence contains internal sequences represented by SEQ ID NO:8, SEQ ID NO:9, 20 SEQ ID NO: 10, SEQ ID NO: 11, SEQ ID NO: 12, SEQ ID NO: 13, SEQ ID NO: 14, SEQ ID NO: 15, SEQ ID NO:16 and SEQ ID NO:17.

48. (New) The enzyme product according to claim 46 that includes a sequence represented by SEQ ID NO:21.

49. (New) The enzyme product according to claim 46 wherein its Km for ADPG is 0.60 mM.

50. (New) A method for isolating an enzyme product of plant origin according to claim 37 comprising the steps of:

a) extracting a protein fraction from plant material using a buffer to obtain an extract;

b) filtering the extract and purifying the extract by centrifugation and precipitation with adjustments both of pH and ionic strength of medium, and

c) purifying the extract by gel filtration, isoelectric focusing, denaturing-gel electrophoresis, or other equivalent means of purification of proteins extracted from the plant.

51. (New) The method according to claim 50 wherein in step b) the extract is heated to above 60° C and then cooled in ice.

52. (New) The method according to claim 50, wherein in step a) the plant material is plant tissue and the plant tissue is homogenized with an extraction buffer, type Mes 50 mM pH 6, EDTA 1 mM, DTT 2 mM; in step b) the extract is ultracentrifuged at 100 000 *g* and precipitated using ammonium sulphate and the precipitate is resuspended in a buffer of pH 4.2 to form a solution, the solution is heated for at least 15 minutes at a temperature between 60 and 65°, then cooled in ice, centrifuging at 30 000 *g* to obtain a supernatant and protein in the supernatant, concentrating the protein of the supernatant by precipitation in ammonium sulphate, resuspending the protein in a buffer of pH 6, and in step c) purifying the protein by gel-filtration chromatography, isolectric focusing or denaturing-gel electrophoresis.

53. (New) A device for determining the presence of nucleoside diphosphate sugars in a sample comprising the enzyme product of claim 37.

54. (New) A composition for use in determining the presence of nucleoside diphosphate sugars in a sample comprising the enzyme product of claim 37.

55. (New) An assay device for determining the presence of nucleoside diphosphate sugars, in a sample comprising the enzyme product of claim 37 wherein the presence of nucleoside disphosphate sugars is measured by the amount of sugar-l-phosphate (GlP) released during a reaction catalysed by the enzyme product.

56. (New) The assay device according to claim 55, wherein the sugar-1-phosphate is glucose-l-phosphate released, which is submitted to the enzyme phosphoglucomutase to produce glucose-6-phosphate, which in its turn is submitted to a coupled reaction with NAD' and NADP' by the action of the enzyme glucose-6-phosphate

dehydrogenase, obtaining 6-phosphogluconate and NADH or NADPH, which can be identified by a spectrophotometric method or other methods of identification.

57. (New) The assay device according to claim 56, characterized in that the determination is based on the nucleoside monophosphate, which is able to release orthophosphate, in addition to the corresponding base, by the action of an enzyme.

58. (New) The assay device according to claim 57 wherein the enzyme is 5'-nucleotidase.

59. (New) The assay device according to claim 55, wherein the sugar-l-phosphate and nucleoside monophosphate are able to release orthophosphate as alkaline phosphatase or 5'-nucleotidase.

60. (New) A device for determining of the presence of 3'-phospho-adenosine 5'-phosphosulphate (PAPS) and adenosine 5'phosphosulphate (APS) in a sample comprising the enzyme product of claim 37.

61. (New) An assay device for measuring sulphonucleotides, comprising the enzyme product of claim 37 and measuring sulphonucleotides based on the amount of sulphate released.

62. (New) A method for producing a transgenic plant that expresses or overexpresses a gene that codes for the enzyme product of claim 37, comprising introducing into a plant a transformation vector that contains a plasmid that includes cDNA represented by SEQ ID NO:20.

63. (New) A method for producing a transgenic plant that expresses or overexpresses a gene that codes for the enzyme product of claim 37 comprising introducing into a plant a transformation vector that contains a plasmid that includes cDNA represented by SEQ ID NO:22.

64. (New) The method of according to claim 62, wherein the transformation vector is *Agrobacterium tumefaciens* CECT 5799.

65. (New) The method of according to claim 63, wherein the transformation vector is *Agrobacterium tumefaciens* CECT 5799.

66. (New) A transgenic plant obtainable by the method as claimed claim 62 having a reduced amount of starch, cell-wall polysaccharides or both as compared to the amount of starch, cell wall polysaccharides or both of a wild-type plant grown under the same conditions, and wherein the transgenic plant is resistant to high temperatures and to high salinity.

67. (New) A transgenic plant obtainable by the method as claimed claim 63 having a reduced amount of starch, cell-wall polysaccharides or both as compared to the amount of starch, cell wall polysaccharides or both of a wild-type plant grown under the same conditions, and wherein the transgenic plant is resistant to high temperatures and to high salinity.

68. (New) A transgenic plant obtainable by the method as claimed claim 64 having a reduced amount of starch, cell-wall polysaccharides or both as compared to the amount of starch, cell wall polysaccharides or both of a wild-type plant grown under the same conditions, and wherein the transgenic plant is resistant to high temperatures and to high salinity.

69. (New) A transgenic plant obtainable by the method as claimed claim 65 having a reduced amount of starch, cell-wall polysaccharides or both as compared to the amount of starch, cell wall polysaccharides or both of a wild-type plant grown under the same conditions, and wherein the transgenic plant is resistant to high temperatures and to high salinity.

70. (New) A primer represented by SEQ ID NO: 18, SEQ ID NO: 19 or SEQ ID NO:24.

71. (New) Use of primers represented by SEQ ID NO:18, SEQ ID NO:19, SEQ ID NO:24 together with an mRNA from leaves of either rice or barley for obtaining, by RT-PCR, a cDNA which, after being used as a probe on cDNA libraries of leaves and

isolating a cDNA represented by SEQ ID NO:20 and a cDNA represented by SEQ ID NO:22.

72. (New) cDNA represented by SEQ ID NO:20 that codes for an enzyme product with NPPase activity.

73. (New) cDNA represented by SEQ ID NO:22 that codes for a fragment of an enzyme product with NPPase activity.

74. (New) Use of the primers of claim 71 and the cDNA represented by SEQ ID NO:20 in the production of transgenic plants that express or overexpress the cDNA that codes for an NPPase.